



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

SOME TYPE-SPECIMENS OF THE AMERICAN CYPRINOID FISHES OF THE
GENUS *Rutilus*.

BY HENRY W. FOWLER.

While studying the cyprinoid fishes in the Academy of Natural Sciences of Philadelphia recently, a number of detailed notes were made on the variation found in the genus *Rutilus*. The material embraces a number of typical specimens of the American species, most of which have not been critically examined since they were described. Owing to the imperfect nature of the incomplete and unsatisfactory original descriptions, it is hoped that the present contribution will be of value. Few, if any, of the species have been figured, and certainly not from these specimens.

In searching for sufficient characters to separate the American from the European species generically, I have been unsuccessful. Most of the former show no scaly axillary ventral flaps, though a few exceptions were noted. All the Old World species have this character very evident, as represented in the collection, the pointed scale appearing quite conspicuous. Therefore, while *Myloleucus* (or *Leucus*) may eventually be found subgenerically distinct, the elevation of *Siphateles* to generic rank by Cockerell¹ would seem hardly warranted solely on scale characters.

Rutilus olivaceus (Cope). Figs. 1-3.

Leucus olivaceus Cope, Proc. Acad. Nat. Sci. Phila., 1883, p. 145. Pyramid Lake, Nevada.

Leucus dimidiatus Cope, l.c. Pyramid Lake.

Siphateles vittatus Cope, l.c., p. 146. Pyramid Lake.

Head $3\frac{1}{3}$ to 4; depth $3\frac{2}{5}$ to 5; D. III, 7, 1, rarely III, 8, 1; A, III, 7, 1, rarely III, 6, 1 or III, 8, 1 or III, 9, 1; scales 50 to 62 in l. l. to caudal base+3 or 4, usually 3, on latter; 13 to 15 scales above l. l., usually 14, frequently 13, seldom 15; 8 to 10 scales below l. l., usually 9, frequently 8 or 10; 29 to 42 predorsal scales; snout $3\frac{1}{5}$ to $4\frac{1}{5}$ in head; eye 3 to $5\frac{1}{4}$; maxillary 3 to $4\frac{3}{5}$; interorbital $2\frac{3}{4}$ to $3\frac{1}{5}$; teeth 5—5, frequently 5—4; length $2\frac{1}{2}$ to $10\frac{3}{4}$ inches.

Nos. 19,354 (type) to 19,366, A. N. S. P., cotypes of *Leucus olivaceus* Cope.

¹ *Proc. Biol. Soc. Wash.*, XXII, 1909, p. 217.

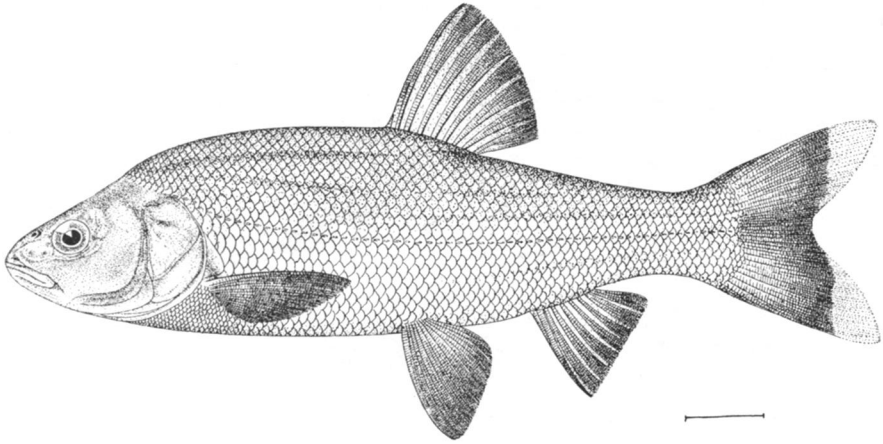


Fig. 1.—*Rutilus olivaceus* (Cope). (Type of *Leucus olivaceus* Cope.)

Nos. 19,392 (type) to 19,399, A. N. S. P., cotypes of *Leucus dimidiatus* Cope.

Nos. 19,882 (type) and Nos. 18,654 to 18,691, A. N. S. P., cotypes of *Siphateles vittatus* Cope.

The young differ from the adults in the projecting mandible, large eye, more or less incomplete l. l., and nearly straight convex upper head profile. The predorsal scales appear to become more numerous with age.

Rutilus oregonensis Snyder² is said to differ in the teeth, which

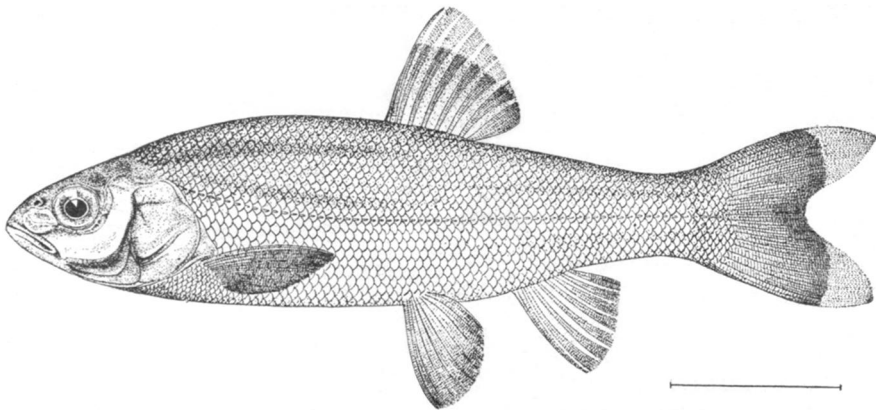


Fig. 2.—*Rutilus olivaceus* (Cope). (Type of *Leucus dimidiatus* Cope.)

² Bull. Bur. Fisher., XXVII, 1908, p. 87.

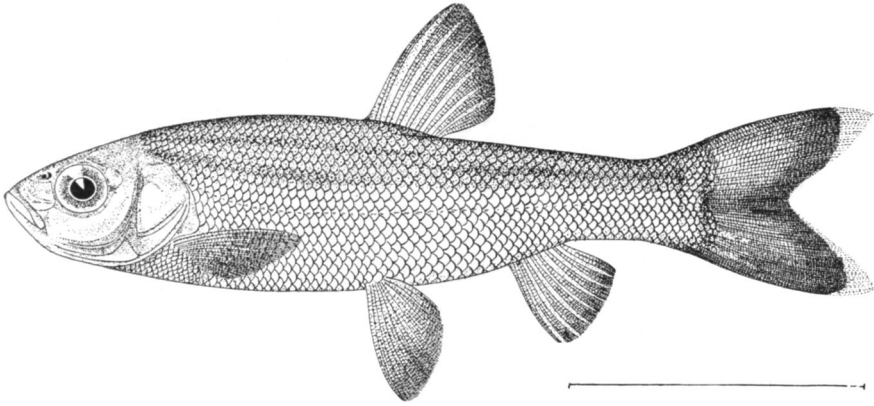


Fig. 3.—*Rutilus olivaceus* (Cope). (Type of *Siphateles vittatus* Cope.)

are given as 4—5. I find in the above series 38 examples have the teeth 5—5, and 19 examples have 5—4.

***Rutilus thalassinus* (Cope). Fig. 4.**

Myloleucus thalassinus Cope, Proc. Acad. Nat. Sci. Phila., 1883, p. 144.
Goose Lake, Oregon.

Head $3\frac{1}{2}$ to $3\frac{7}{8}$; depth $3\frac{1}{5}$ to $4\frac{1}{3}$; D. III, 8, I, rarely III, 7, I; A. III, 7, I, occasionally III, 8, I, rarely III, 6, I; scales 42 to 50 in l. l. to caudal base, usually between 46 and 49+2, rarely 3, on latter; 10 scales above l. l., rarely 9 or 11; 7 scales below l. l., frequently 6, rarely 5; 20 to 25 predorsal scales; snout $3\frac{1}{2}$ to 4 in head; eye $3\frac{1}{4}$ to 7; maxillary $3\frac{1}{5}$ to $3\frac{7}{8}$; interorbital $2\frac{3}{4}$ to $3\frac{2}{7}$; teeth 5—4; length $3\frac{3}{16}$ to $11\frac{1}{2}$ inches.

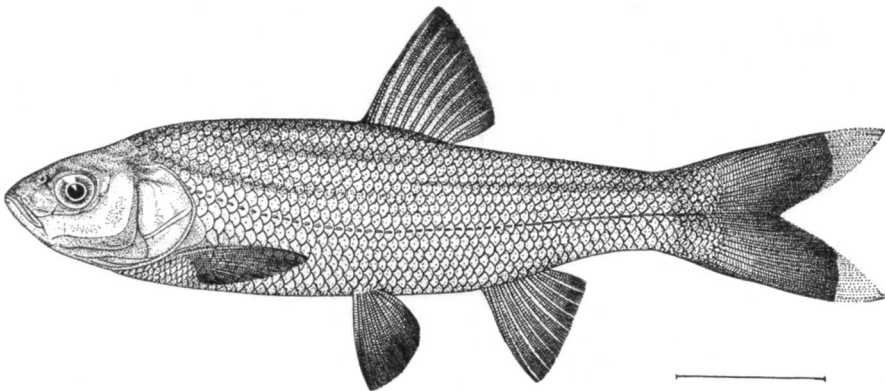


Fig. 4.—*Rutilus thalassinus* (Cope). (Type of *Myloleucus thalassinus* Cope.)

No. 19,848, A. N. S. P., type of *Myloleucus thalassinus* Cope. It agrees largely with *Rutilus bicolor* Gilbert.³ The head is given as $3\frac{1}{2}$ to $3\frac{5}{8}$, which is a little smaller than in the types of *Algansea antica* Cope. Gilbert has identified *Myloleucus parovanus* Cope with this species, though is not followed by Snyder.⁴

Also a series of examples from Klamath Lake and Goose Lake, Oregon (Cope), and "Pyramid Lake, Nevada"? (Cope). The Klamath Lake specimens were all identified by Cope as *M. parovanus*. Likely the Pyramid Lake example is wrongly labelled.

Rutilus anticus (Cope). Fig. 5.

Algansea antica Cope, Proc. Acad. Nat. Sci. Phila., 1864, p. 282. "Texas."

Head $2\frac{7}{8}$ to $3\frac{1}{8}$; depth $3\frac{3}{8}$ to $3\frac{2}{3}$; D. III, 7, 1; A. III, 7, 1; scales 45 to 50 in l. l. to caudal base + 2 or 3 more on latter; 10 to 12 scales above l. l.; 7 or 8 scales below l. l.; 24 to 26 predorsal scales; snout $3\frac{1}{4}$ to

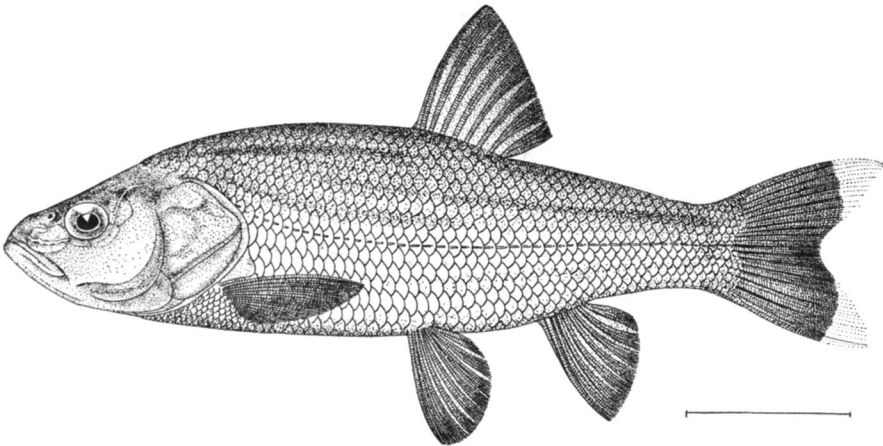


Fig. 5.—*Rutilus anticus* (Cope). (Type of *Algansea antica* Cope.)

4 in head; eye 4 to $5\frac{1}{4}$; maxillary $3\frac{1}{2}$ to 4; interorbital $3\frac{1}{10}$ to $3\frac{1}{2}$; teeth 5—5 or 5—4; length $3\frac{7}{8}$? to $5\frac{1}{8}$ inches.

Nos. 4,911 (type) to 4,913, A. N. S. P., cotypes of *Algansea antica* Cope. The type locality given as "Texas" is doubtless erroneous, no member of the genus ever having been found there. It is likely these specimens really came from some lake or stream in California, Nevada or Oregon?. Provisionally, they may be distinguishable from *Myloleucus bicolor* by the larger head, ranging as $2\frac{7}{8}$ to $3\frac{1}{8}$.

³ Bull. U. S. F. Com., XVII, 1897, p. 8, fig.

⁴ Bull. Bur. Fisher., XXVII, 1907, p. 86.

Rutilus symmetricus (Girard). Fig. 6.

Pogonichthys symmetricus (Baird and Girard) Girard, Proc. Acad. Nat. Sci. Phila., 1854, p. 136. Fort Miller, San Joaquin Valley, California.

Head $3\frac{5}{8}$ to 4; depth $3\frac{3}{4}$? to $4\frac{2}{3}$; D. usually III, 7, I, rarely III, 8, I; A. III, 7, I; scales 52 to 56 in l. l. to caudal base+2 to 4 more on latter; 12 scales above l. l., rarely 13; 7 or 8 scales below l. l.; usually 32 predorsal scales, rarely 28 or 31; snout 3 to $3\frac{1}{4}$ in head; eye $3\frac{4}{5}$ to $4\frac{3}{7}$; maxillary 3 to $3\frac{1}{3}$; interorbital $2\frac{2}{3}$ to 3; teeth 5—5 or 5—4; length $3\frac{7}{8}$ to $5\frac{1}{2}$ inches.

Nos. 5,330 to 5,333, A. N. S. P., cotypes of *Pogonichthys symmetricus* Girard. Dr. A. L. Heermann. From the Smithsonian Institution (No. 191).

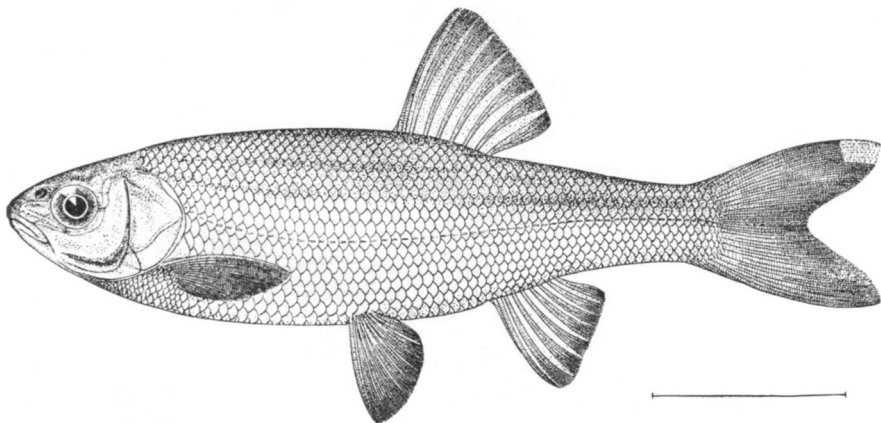


Fig. 6.—*Rutilus symmetricus* (Girard). (Cotype of *Pogonichthys symmetricus* Girard.)

An example from northern California? (Cope) is also identical.

This species approaches the physiognomy of *Leuciscus*, and differs at once from all of our American *Rutilus* in the protruding snout and included mandible. Although Rutter retains *Algansea formosa* Girard as a synonym⁵, it differs in the projecting mandible.

Rutilus formosus (Girard). Fig. 7.

Algansea formosa Girard, Proc. Acad. Nat. Sci. Phila., 1856, p. 183. Mercede and Mohave Rivers.

Head $3\frac{1}{3}$ to $3\frac{7}{8}$; depth $3\frac{1}{4}$ to $4\frac{1}{3}$; D. usually III, 7, I, frequently III, 8, I; A. III, 7, I, rarely III, 6, I; scales in l. l. to caudal base, usually 50, frequently 52, sometimes 51 or 47, occasionally 49 or 53, seldom 48, rarely 46+usually 3, occasionally 4, rarely 2; usually 12 scales

⁵ *Bull. Bur. Fisher.*, XXVII, 1907 (1908), p. 137.

above 1. 1., frequently 11, seldom 13, rarely 14; usually 7 scales below 1. 1., frequently 8, often 9; usually 25 predorsal scales, frequently 24, often 26, seldom 23 or 27, rarely 29 or 30; snout $3\frac{1}{4}$ to $4\frac{1}{3}$ in head; eye $3\frac{1}{6}$ to 6; maxillary 3 to 4; interorbital $2\frac{3}{4}$ to $3\frac{3}{7}$; teeth usually 5—4, rarely 5—5 or 4—4; length $1\frac{3}{4}$ to 8 inches.

No. 4,914, A. N. S. P., cotype of *Algansea formosa* Girard. Merced River, California. Dr. A. L. Heermann. Smithsonian Institution (No. 196).

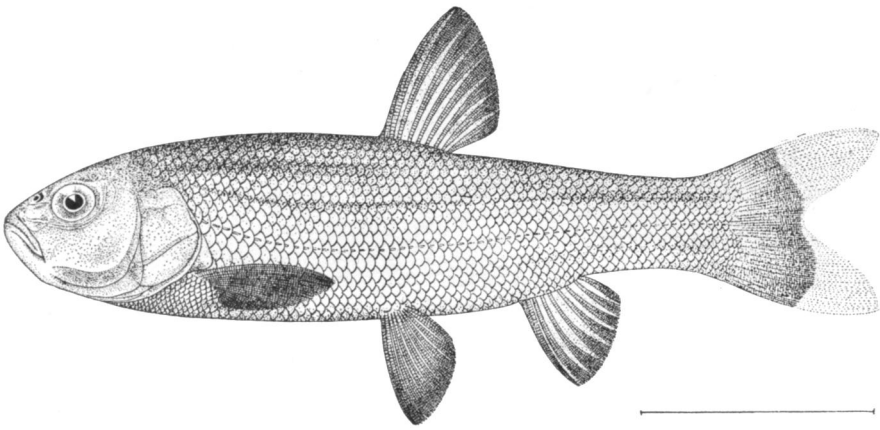


Fig. 7.—*Rutilus formosus* (Girard). (Cotype of *Algansea formosa* Girard.)

Also 38 other examples from: Chewaucan (Cope), Warner's Third Lake (Cope), Silver Lake (Cope), Oregon; Mohave River (Hammond), Pose Creek (Heermann), California.

Seven more examples, though with uncertain data, were likely from the Mohave River in California?. They are not included in the above computations.

Myloleucus pulverulentus Cope, from Warm Springs, Utah, as represented by a co-type in the collection, is not a *Rutilus*, and therefore cannot be identified with *Pogonichthys symmetricus* Girard, as the teeth are biserial. It is likely identical with *Leuciscus lineatus* (Girard).